



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/870,812

05/31/2001

Kazuto Okazaki

4296-138 US

1256

7590

06/15/2004

MATHEWS, COLLINS, SHEPHERD & GOULD, P.A.
100 THANET CIRCLE, SUITE 306
PRINCETON, NJ 08540

EXAMINER

DUONG, THANH P

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/870,812

Applicant(s)

OKAZAKI ET AL.

Examiner

Tom P Duong

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-14 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/13/01, 10/9/01
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-12, drawn to an apparatus for the treatment of a waste gas containing combustible compounds, classified in class 422, subclass 173.
- II. Claims 13-14, drawn to a method for treatment of a waste gas containing combustible compounds, classified in class 423, subclass 245.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process of treating of the waste gas can be done by another process such as a combustion chamber without the use of a catalyst other than a catalytic oxidation reactor.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Ms. Diane McKay on June 8, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 13-14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-5 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohuri et al. (3,988,423) in view of Sato et al. (4,418,045). Regarding claims 1 and 8, Ohuri discloses an apparatus (Fig. 1) for treating of a waste gas (Abstract) containing

Art Unit: 1764

combustible compounds (Col. 1, lines 9-17) comprising: a catalytic oxidation reactor (15) for the treatment of the waste gas; plural preheating devices (heat exchangers 16 and 18) for heating the waste gas. Ohuri discloses the waste gas is being supply to the heat exchangers (16) but fails to disclose a device for supplying or transferring the waste gas to the reactor. Sato teaches a device (booster fan 2) to facilitate the transfer of waste gas to the heat exchanger. Thus, it would have been obvious in view of Sato to one having ordinary skill in the art to modify the apparatus of Ohuri with a device for supplying oxygen-containing gas as taught by Sato in order to facilitate the transfer of waste gas to heat exchanger. Ohuri discloses an oxygen-containing gas being supply (air supply via line 19) to the waste gas inlet (via line 3) of the first waste gas pre-heater (16) and the inlet of the reactor but fails to disclose a device for supplying the oxygen-containing gas. Sato teaches a device (air supply fan 10) for diluting the air with the waste gas and such fan facilitates the transfer of air to the heat exchanger. Thus, it would have been obvious in view of Sato to one having ordinary skill in the art to modify the apparatus of Ohuri with a device for supplying oxygen-containing gas as taught by Sato in order to facilitate the transfer of air to the heat exchanger. Ohuri discloses a treated gas emanating (via line 7) from the reactor (15) as a heat source being supplied to the waste gas pre-heater (16) and a heat-recovering device (18) but fails to disclose the treated gas feeding to the second to n'th waste gas pre-heaters. It would have been obvious in view of Ohuri to one having ordinary skill in the art to duplicate additional waste gas pre-heaters (n'th waste gas pre-heaters) to further preheat the waste gas stream or additional waste gas stream. Note, the court held that mere duplication of

parts has no patentable significance unless a new and unexpected result is produced. (See *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)). Likewise, Sato teaches a second waste gas pre-heater (44) is used to further heat the waste gas (from line 34) by the treated waste gas (line 40) emanating from the reactor 36 and heat recovering device (38). Thus, it would have been obvious in view of Sato to one having ordinary skill in the art to modify the apparatus of Ohuri with a second waste gas pre-heater as taught by Sato in order to provide additional heating means to further preheat the waste gas stream prior feeding to the reactor. Ohuri discloses a treated gas (gas exiting heat exchanger 16) being mixed with the waste gas (via line 12) to the reactor (17) but fails to disclose a treated gas emanating from heat-recovering device being supplied to the first waste gas pre-heater or the treated gas emanating from at least one of said second to n'th waste gas pre-heaters an the treated gas emanating from heat-recovering device being supplied to first waste gas pre-heater as the heat source. Sato teaches the treated gas (48) emanating from the heat-recovering device (38) is supplied to the first waste gas pre-heater (33) to preheat the incoming waste gas (31). Thus, it would have been obvious in view of Sato to one having ordinary to modify the apparatus of Ohuri with a treated waste gas stream from the heat-recovering device to be used as a heat source to preheat the waste gas in the first waste gas pre-heater. With respect to claim 8, the applied references disclose all the limitations as described in claim 1 above, and Ohuri further discloses the amount of treated gas from the reactor is zero (best understood to be the oxygen content in the treated gas) or the oxygen concentration in the treated gas (stack) is 0 to 0.5% volume (Col. 4, lines 19-23). Regarding claims 2

Art Unit: 1764

and 9, Ohuri discloses a molecular oxygen-containing gas (air supply line 19) being supplied to the waste gas inlet of first waste gas pre-heater (16). Regarding claims 3-4 and 10-11, Ohuri discloses oxygen-containing gas (supply air line 19) feeding to the heat exchanger 16 prior feeding to the reactor (17) but fails to disclose the oxygen-containing gas between the waste gas pre-heater and the reactor. Ohuri discloses the amount of oxygen supply from line 19 is controlled so that the concentration of the remaining gas exiting line 14 has essentially zero (Col. 4, lines 19-28) percent oxygen content and the combustion temperature in the catalyst reactor 17 is maintained within its operating range (Col. 3, lines 37-41). Thus, it appears the oxygen-containing gas feed before the waste gas pre-heaters as disclosed by Ohuri provides proper temperature control in the catalytic reactor with zero percent oxygen content in the stack. Therefore, it would have been obvious in view of Ohuri to supply an oxygen-containing gas either before or after the waste gas pre-heaters just along as proper temperature control can be maintained in the catalyst reactor and the exiting treated gas has essentially zero oxygen content. Regarding claim 5, Ohuri fails to disclose part of the treated gas emanating from said heat-recovering device being supplied to reactor. Sato teaches that it is desirable to circulate part of the emanating gas from the heat recovery unit 18 and mix with the waste gas stream 14 to preheat waste gas in stream 14 prior feeding to the reactor. Thus, it would have been obvious in view of Sato to one having ordinary skill in the art modify the apparatus of Ohuri with a re-circulation treated gas from the heat-recovering device as taught by Sato in order to preheat the waste gas stream 14.

2. Claims 6-7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applied references (Ohruai '423 in view of Sato '045) as applied in claim 1, above and further in view of Brewer et al. (4,038,032) and Lamberti et al. (4,101,632). The applied references fail to disclose a temperature measuring means for treated gas emanating from said first waste gas pre-heater and a molecular oxygen-containing gas flow controller to adjust the amount of oxygen supplied to the waste gas outlet and waste gas inlet of the reactor. Brewer teaches a control system (Figure and Col. 4, lines 24-62) for treating waste gas with temperature measuring means (13) with feedback signal to the temperature controller (16) to regulate the amount of oxygen-containing gas (air, col. 4, lines 8-11) to the waste gas incinerator unit 1 (reactor). Thus, it would have been obvious in view of Brewer to one having ordinary skill in the art to modify the apparatus of the applied references with temperature measuring means as taught by Brewer in order to provide proper amount of oxygen-containing gas (air) to the reactor. Likewise, Lamberti also teaches temperature-measuring means (8) which controls the temperature in the combustion chamber (reactor) (Col. 3, lines 60-65) and oxygen controller 22 to control the waste gas outlet (exhaust gas) to obtain a stack with free oxygen (Col. 4, lines 27-54). Thus, it would have been obvious in view of Lamberti to one having ordinary skill in the art to modify the apparatus of the applied reference with temperature measuring means to control the temperature in the combustion chamber (reactor) and with oxygen controller to control or adjust the amount of oxygen discharged thru the stack (waste gas outlet).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom P Duong whose telephone number is (571) 272-2794. The examiner can normally be reached on 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Duong
June 10, 2004

TD


Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700